

What is claimed is

1. A method for sub-network connection protection in a transmission network, said method comprising the steps of:
 - providing at least one protected path segment between a first network element and a second network element;
 - providing at least one protection path segment between said first and second network elements;
 - creating a tandem connection along said protected path segment between said first and second network elements;
 - detecting a failure on said protected path segment by means of a tandem connection monitoring function in the second network element; and
 - upon detection of the failure; inserting a tandem connection defect indication into a reverse traffic signal, bridging said reverse traffic signal to the protection path segment, and selecting said protection path segment to receive a traffic signal from the protection path segment, wherein said defect indication being transmitted on the protected path segment at least as long as the failure persists.
2. A method according to claim 1, further comprising the step of:
 - upon reception of said defect indication at the first network element, bridging said traffic signal to the protection path segment.

3. A method according to claim 1, further comprising the steps of:
 - detecting said failure by means of a tandem connection monitoring function in the first network element; and
 - upon detection of the failure; inserting a defect indication into said traffic signal, bridging said traffic signal to a protection path segment, and selecting said protection path segment to receive said reverse traffic signal from the protection path segment.
4. A method according to claim 1, wherein the insertion of said defect indication being effected by a forced insertion that persists even after traffic has been re-established over said protection path segment as long as the failure on the working path segment persists.
5. A method according to claim 1, wherein the insertion of said defect indication being effected by creating a duplicated tandem connection termination function in front of the switching point for the bridge, so that said duplicated tandem connection termination function serves for exclusively monitoring said failed protected path segment and automatically inserting a reverse defect indication as long as the failure persists.
6. A method according to claim 1, further comprising the steps of assigning an unique trail trace identifier to said tandem connection on said protected path segment and identifying a bridged traffic signal on a protection path segment by means of said trail trace identifier.
7. A method according to claim 1, further comprising the step of defining one of the tandem connection terminating network elements as slave network element and the other as master network element, said slave network element following the selection of a protection path segment of the master network element and using the same selected protection path segment in the case of a failure.

8. A method according to claim 1, further comprising the step of detecting when said failure is no longer present or when said defect indication is no longer received and initiating revert to normal operation.

9. A method according to claim 8, further comprising the steps of starting a first timer; after lapse of said first timer, reverting selection of said protection path segment and starting a second timer and after lapse of said second timer, removing said bridge to said protection path segment.

10. A method according to claim 1, further comprising the steps of:

- communicating the occurrence of the failure to a network management system; and
- by means of said network management system, providing a new working path segment between said first and second network elements.

11. A method according to claim 1, wherein said tandem connection defect indication is a tandem connection reverse defect indication or a tandem connection outgoing defect indication.

12. A method of protecting at least one protected path segment between a first network element and a second network element in a transmission network by means of at least one protection path segment, said method comprising the steps of detecting a failure on said protected path segment and bridging a traffic signal to be transmitted over said failed protected path segment to the protection path segment; said method being characterized by the use of a tandem connection monitoring function to detect said failure and a tandem connection defect indication to communicate the occurrence of said failure from second to first network element and initiating said bridging step.

13. A network element for a transmission network, said network element and associated control means being adapted and programmed to

- receive and transmit traffic signals on at least one protected path segment to a far end network element;
- receive and transmit traffic signals on at least one protection path segment to the same far end network element;
- create a tandem connection along said protected path segment;
- detect a failure on said protected path segment by means of a tandem connection monitoring function; and
- upon detection of the failure; to insert a tandem connection defect indication into a reverse traffic signal, to bridge said reverse traffic signal to the protection path segment, and to select said protection path segment to receive a traffic signal from the protection path segment, said defect indication being transmitted on the protected path segment as long as the failure persists.

14. A network management system for a transmission network, said system being adapted and programmed to

- provide at least one protected path segment between a first network element and a second network element;
- provide at least one protection path segment between said first and second network elements; and
- upon occurrence of a failure on said protected path terminate detected and communicated by one of said network elements, to provide a new working path between said first and second network elements.